Amendments to the Claims

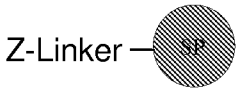
This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-13 (Canceled).

14. (New) A process for purifying a radiolabelled product comprising the steps of:

(i) contacting a solution-phase radiosynthesis reaction mixture comprising the radiolabelled product, excess precursor and, optionally, reaction by-product, with a solid-support bound scavenger group of formula (IV):



(IV)

wherein:

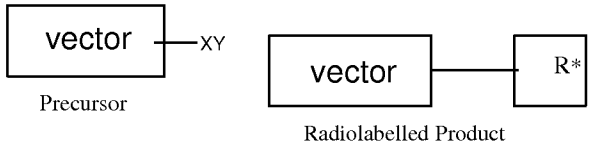
Z is a scavenger group selected from the group consisting of: isocyanate, isothiocyanate, thiol, hydrazine, hydrazide, aminooxy, 1,3-dipole, aldehyde, ketone, $-NH_2$, H_2N-C_{1-15}alkyl, H_2N-C_{7-15}aryl, H_2N-NH-, H_2N-NH-C(=O), H_2N-O-, phenylhydrazines, semicarbazide, and thiosemicarbazide; and

SP is a solid support;

wherein said excess precursor and, if present, said reaction by-product forms a covalent bond with said compound of formula (IV); and

(ii) separating said radiolabelled product in the solution-phase.

15. (New) The process according to claim 14 wherein said excess precursor is of formula (I) and said radiolabelled product is of formula (III):



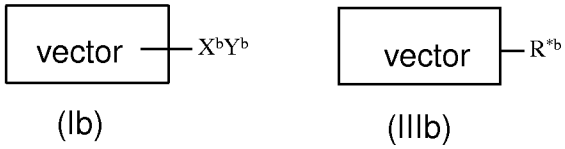
wherein XY is a functional group and R* is a radioisotope or radiolabelled portion.

16. (New) The process according to claim 14 wherein said excess precursor is of formula (Ia) and said radiolabelled product is of formula (IIIa):

wherein R^1 is C_{1-6} alkyl and R* is [^{11}C]-C_{1-6}alkyl, [^{18}F]fluoro C_{1-6} alkyl or [^{18}F]fluoro C_{6-12} aryl;

and Z of the compound of formula (IV) is isocyanate or isothiocyanate.

17. (New) The process according to claim 14 wherein said excess precursor is of formula (Ib) and said radiolabelled product is of formula (IIIb):



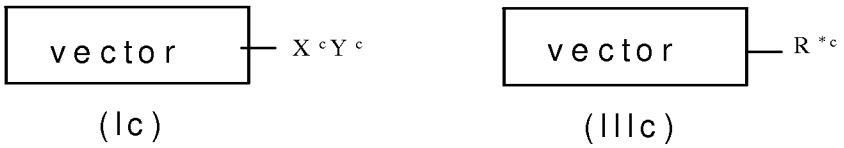
wherein either

(i) the functional group $-X^bY^b$ in the compound of formula (Ib) is $-OSO_2R^3$ wherein R^3 is C_{1-15} alkyl or C_{1-10} alkylaryl and R^3 is optionally substituted by halo and R^{*b} in the compound of formula (IIIb) is a radiohalogen; or

(ii) the functional group $-X^bY^b$ in the compound of formula (Ib) is $-C(O)CH_2Cl$ and R^{*b} in the compound of formula (IIIb) is $-S\text{-}L^b\text{-}{}^nF$ wherein L^b is a C_{1-30} hydrocarbyl linker group optionally including 1 to 10 heteroatoms; and ^nF is a radioisotope of fluorine; and

Z of the compound of formula (IV) is thiol.

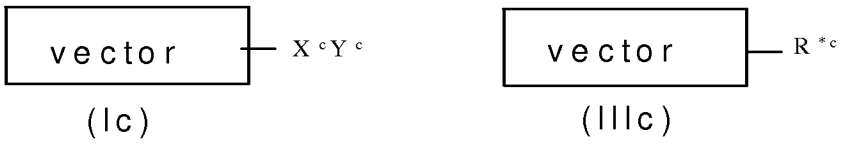
18. (New) The process according to claim 14 wherein said excess precursor is of formula (Ic) and said radiolabelled product is of formula (IIIc):



wherein the functional group $-X^cY^c$ in the compound of formula (Ic) is an aldehyde or ketone and R^{*c} in the compound of formula (IIIc) is =N-W-Linker-F where W is C_{1-15} alkyl or C_{7-15} aryl; and

Z of the compound of formula (IV) is $-NH_2$, hydrazine, hydrazide, aminooxy, phenylhydrazines, semicarbazide, or thiosemicarbazide.

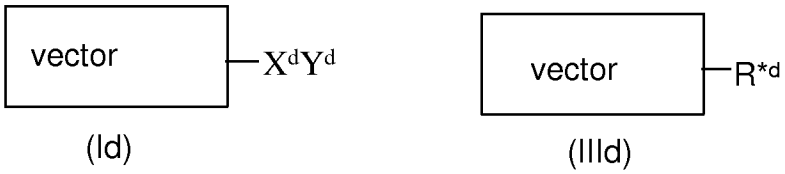
19. (New) The process according to claim 14 wherein said excess precursor is of formula (Ic) and said radiolabelled product is of formula (IIIc):



wherein the functional group $-X^cY^c$ in the compound of formula (Ic) is $-OSO_2R^3$ wherein R^3 is C_{1-15} alkyl or C_{1-10} alkylaryl and R^3 is optionally substituted by halo and R^{*c} in the compound of formula (IIIc) is =N-W-Linker-F where W is C_{1-15} alkyl or C_{7-15} aryl; and

Z of the compound of formula (IV) is H_2N-C_{1-15}alkyl, H_2N-C_{7-15}aryl, H_2N-NH-, H_2N-NH-C(=O), or H_2N-O-.

20. (New) The process according to claim 14 wherein said excess precursor is of formula (Id) and said radiolabelled product is of formula (IIId):



(Id) (IIId)

wherein the functional group $-X^dY^d$ in the compound of formula (Id) is an amine, hydrazine, hydrazide , aminooxy, phenylhydrazine, semicarbazide, or thiosemicarbazide group and R^{*d} in the compound of formula (IIId) is =CH-Linker-[18F]F where the linker comprises an alkyl, aryl or polyethylene glycol component; and

Z of the compound of formula (IV) is an aldehyde or ketone.

21. (New) The process according to claim 20 wherein Z is a ketone based on a ring-opening metathesis polymerisation (ROMP) polymer backbone.

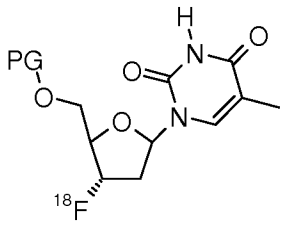
22. (New) The process according to claim 14 wherein said reaction by-product is present and is of formula (VIIe) and said radiolabelled product is of formula (IIIe):

(VIIe) (IIIe)

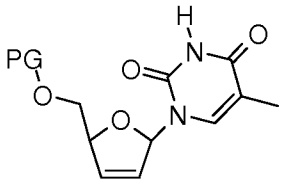
wherein said reaction by-product of formula (VIIe) contains an unwanted double bond, formed by an elimination side-reaction, and R^{*e} in the compound of formula (IIIe) is radiohalo; and

Z of the compound of formula (IV) is a 1,3-dipole selected from $-N=N^+=N^-$ or $-C\equiv N^+-O^-$.

23. (New) The process according to claim 22 wherein said radiolabelled product of formula (IIIe) and said reaction by-product of formula (VIIe) have the following formulae:



(IIIe)



(VIIe)

wherein each PG is hydrogen or a hydroxyl protecting group.